RACAL INSTRUMENTS™

1260-131

1X4 MULTIPLEXER PLUG-IN

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Before undertaking any troubleshooting, maintenance or exploratory procedure, read carefully the **WARNINGS** and **CAUTION** notices.

This equipment contains voltage hazardous to human life and safety, and is capable of inflicting personal injury.

If this instrument is to be powered from the AC line (mains) through an autotransformer, ensure the common connector is connected to the neutral (earth pole) of the power supply.

Before operating the unit, ensure the conductor (green wire) is connected to the ground (earth) conductor of the power outlet. Do not use a two-conductor extension cord or a three-prong/two-prong adapter. This will defeat the protective feature of the third conductor in the power cord.

Maintenance and calibration procedures sometimes call for operation of the unit with power applied and protective covers removed. Read the procedures and heed warnings to avoid “live” circuit points.

Before operating this instrument:

1. Ensure the proper fuse is in place for the power source to operate.

2. Ensure all other devices connected to or in proximity to this instrument are properly grounded or connected to the protective third-wire earth ground.

If the instrument:

- fails to operate satisfactorily
- shows visible damage
- has been stored under unfavorable conditions
- has sustained stress

Do not operate until performance is checked by qualified personnel

.

Racal Instruments

EC Declaration of Conformity

We

Racal Instruments Inc.
4 Goodyear Street
Irvine, CA 92718

declare under sole responsibility that the

1260-131A Multiplexer Plug In Module P/N 407812-001
1260-131B Multiplexer Plug In Module P/N 407812-002

conform to the following Product Specifications:

Safety: EN 61010-1:1993+A2:1995

EMC: EN61326:1997+A1:1998

Supplementary Information:

The above specifications are met when the product is installed in a Racal Instruments certified mainframe with faceplates installed over all unused slots, as applicable.

The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC.

Irvine, CA, April 10, 2002 Karen L Evensen

Karen Evensen, Engineering Director

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DOCUMENT CHANGE HISTORY

Revision	Date	Description of Change
A	9/24/08	Revised per EO 29398 Revised format to current standards. Company name revised throughout manual. Manual now revision letter controlled. Added Document Change History Page v.

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Chapter 1
SPECIFICATIONS

Introduction

The 1260-131 is a 1X4 Multiplexer plug-in switch module for the 1260-100 Adapt-a-Switch Carrier and the 1256 Switching System. The 1260-131 is available in two models:

- 1260-131A, 10-1X4 Multiplexer with 64 pin DIN connector.
- 1260-131B, 26-1X4 Multiplexer with High Density, 160 pin connector..

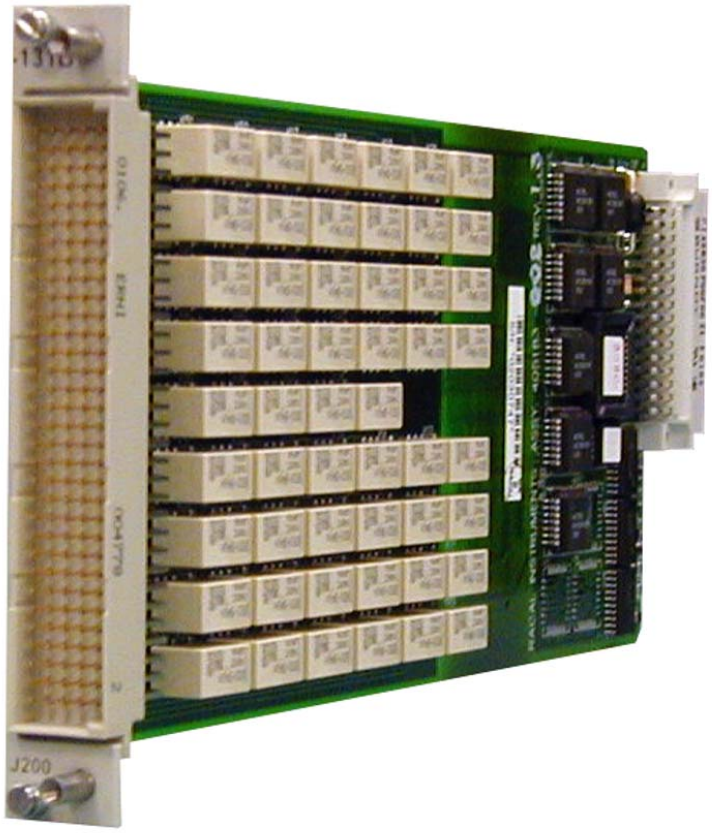

Figure 1-1, 1260-131B

Specifications

Bandwidth (-3dB, 50Ω)	200 MHz
Insertion Loss (50Ω)	
1MHz	≤ 0.1dB
10 MHz	≤ 0.2dB
Isolation (50Ω)	
1MHz	≥ 60dB
10MHz	≥ 40dB
Crosstalk (50Ω)	
1MHz	≤ -60dB
10MHz	≤ -40dB
Switching Voltage	
AC	250V, Max
DC	220V, Max
Switching Current	
AC	2A, Max, (1A Max 1260-131A)
DC	2A, Max, (1A Max 1260-131A)
Switching Power	
AC	125VA, Max
DC	60W, Max 1260-131B 30W, Max 1260-131A
Initial Path resistance	≤ 400mΩ
Thermal EMF	≤ 6uV
Capacitance	
Channel-Chassis	≤ 60pF
Open-Channel	≤ 5pF
Insulation resistance	> $10^9\Omega$
Relay Settling Time	≤ 5ms
Shock	30g, 11 ms, ½ sine wave
Vibration	0.013 in. P-P, 5-55 Hz
Bench Handling	4 in., 45°
Cooling	

Adapt-A-Switch:	3 liters/sec at 0.7mm H_2O
1256:	Maximum Power Dissipation based on 1256 “Signal Switch Plug-in De-ratings
Temperature	
Operating	0°C to +55°C
Non-operating	-40°C to +75°C
Relative Humidity	85% ± 5% non-condensing at ≤ 30°C
Altitude	
Operating	10,000 feet
Non-operating	15,000 feet
Power Requirements	+5 VDC at 150mA plus 30mA per energized relay ≤ 1.7Amps
Weight	9oz. (260g) 1260-131B 6oz (170g) 1260-131A
MTBF	822,885 hours (MIL-HDBK-217E) (Excluding Relays)
Dimensions	4.5” H x 0.75” W x 9.5” D

Power Dissipation

While the cooling of the Adapt-a-Switch carrier is dependent upon the chassis into which it is installed, the carrier can normally dissipate approximately 100 W. Care must be taken, then, in the selection and loading of the plug-in modules used in the carrier. It is not possible to fully load the carrier, energize every relay, and run full power through every set of contacts, all at the same time. In practice this situation would never occur.

To properly evaluate the power dissipation of the plug-in modules, examine the path resistance, the current passing through the relay contacts, the ambient temperature, and the number of relays closed at any one time.

For example, if a 1260-131B module (containing 52 relays) has 26 relays closed, passing a current of 0.5 A, then

Total power dissipation =
[(current)^2 * (path resistance) * 26] + [:Coil

Power*26]+(quiescent power)

By substituting the actual values:

Total power dissipation =
$[(0.5\ A)^2 * (.4\Omega) * 26] + [.15W * 26] + (0.75\ W) = 7.25W$ at 55°C

This is acceptable power dissipation for an individual plug-in module. If five additional modules are likewise loaded, then the overall carrier dissipation is approximately 45 W, which is well within the cooling available in any commercial VXIbus chassis. In practice, rarely are more than 25% of the module's relays energized simultaneously, and rarely is full rated current run through every path. In addition, the actual contact resistance is typically one-half to one-fourth the specified maximum, and temperatures are normally not at the rated maximum. The power dissipated by each plug-in should be no more than 16W if all six slots are used simultaneously. This yields the following guideline:

0.5 A	Max. 26 paths
1.0 A	Max. 20 paths
2.0 A	Max. 8 paths

Most users of a signal-type switch, such as the 1260-131, switch no more than a few hundred milliamperes and are able to energize all relays simultaneously, should they so desire. The numbers in the above table represent worst-case, elevated-temperature, end-of-life conditions and 100% duty cycle.

Additionally, if fewer plug-in modules are used, more power may be dissipated by the remaining cards. By using a chassis with high cooling capacity, such as the 1261B, almost any configuration may be realized.

For the 1256 Chassis, the user should follow the "Signal Switch Plug-in" de-rating guidelines. In general, if switching the max rated current, 2 Amps, for a 1260-131B, a 25% max channel use (6 Channels) limitation is imposed to keep heat dissipation limited. If running at less than .5 Amp, there is no limitation on the maximum number of channels used.

About MTBF

The 1260-131 MTBF is 822,885 hours, calculated in accordance with MIL-HDBK-217E, with the exception of the electromechanical relays. Relays are excluded from this calculation because relay life is strongly dependent upon operating conditions. Factors affecting relay life expectancy are:

1. Switched voltage
2. Switched current
3. Switched power
4. Maximum switching capacity
5. Maximum rated carrying current
6. Load type (resistive, inductive, capacitive)
7. Switching repetition rate
8. Ambient temperature

The most important factor is the maximum switching capacity, which is an interrelationship of maximum switching power, maximum switching voltage and maximum switching current. When a relay operates at a lower percentage of its maximum switching capacity, its life expectancy is longer. The maximum switching capacity specification is based on a resistive load, and must be further de-rated for inductive and capacitive loads.

For more details about the above life expectancy factors, refer to the data sheet for the switch plug-in module.

The relay used on the 1260-131 plug-in is part no. 310256-001. The relay manufacturer's specifications for this relay are:

Life Expectancy

Mechanical	100,000,000 operations
Electrical	100,000 operations at 60 W / 62.5 VA

For additional relay specifications, refer to the relay manufacturer's data sheet.

	Vendor	Part Number
1.	Aromat	TX2SS-5V
	Siemans	V23079G1001B201

Ordering Information

Listed below are part numbers for both the 1260-131 switch module and available mating connector accessories. Each 1260-131uses a single mating connector.

ITEM	DESCRIPTION	PART
1260-131A Switch Module	Switch Module, 10 (1X4) Mux Plug-in	407812-001
1260-131B Switch Module	Switch Module, 26 (1X4) Mux Plug-in	407812-002
IDC Connector	64 Pin DIN Connector, IDC (-131A)	602004
Crimp Connector	64 Pin DIN Crimp Body (-131A)	602159-064
Crimp Pin	64 Pin DIN crimp Pin (-131A	602159-900
Connector Kit	160 Pin Conn. Kit (-131B)	407664
Interface Cable	6 Ft, 160 Pin Cable (-131B)	407408-001
Additional Manual	131 User's Manual	980824-131

Chapter 2

INSTALLATION INSTRUCTIONS

Unpacking and Inspection

1. Remove the 1260-131 module and inspect it for damage. If any damage is apparent, inform the carrier immediately. Retain shipping carton and packing material for the carrier's inspection.

2. Verify that the pieces in the package you received contain the correct 1260-131 module option and the 1260-131 Users Manual. Notify EADS North America Test and Services, if the module appears damaged in any way. Do not attempt to install a damaged module into a VXI chassis.

3. The 1260-131 module is shipped in an anti-static bag to prevent electrostatic damage to the module. Do not remove the module from the anti-static bag unless it is in a static-controlled area.

Reshipment Instructions

1. Use the original packing when returning the switching module to EADS North America Test and Services, for calibration or servicing. The original shipping carton and the instrument's plastic foam will provide the necessary support for safe reshipment.

2. If the original packing material is unavailable, wrap the switching module in an ESD Shielding bag and use plastic spray foam to surround and protect the instrument.

3. Reship in either the original or a new shipping carton.

Installation

Installation of the 1260-131 Switching Module into a 1260-100 Carrier assembly is described in the Installation section of the 1260-100 Adapt-a-Switch Carrier Manual.

Installation of the 1260-131 Switching Module into a 1256 Switching System is described in the installation section of the 1256 User Manual.

Module Configuration

The 1260-131 is a 1X4 Multiplexer, single-wire plug-in for the Adapt-a-Switch and 1256 Series. Its relay architecture permits it to be organized via software into many configurations. These configurations are equivalent to a 1-wire, 2-wire, … n-wire 1X4 Multiplexers. The software command *Include* provides this flexibility without the use of hardware jumpers.

Other types of configurations are possible by using jumpers at the front-panel connectors. The user can thus configure the module as a 1X16 Multiplexer up to a 1X64 Multiplexer.

Figure 2-1 shows a block diagram of the 1260-131. **Figure 2-2** shows the pin numbering for the front-panel connector. For connector pin assignments, refer to **Table 2-1**.

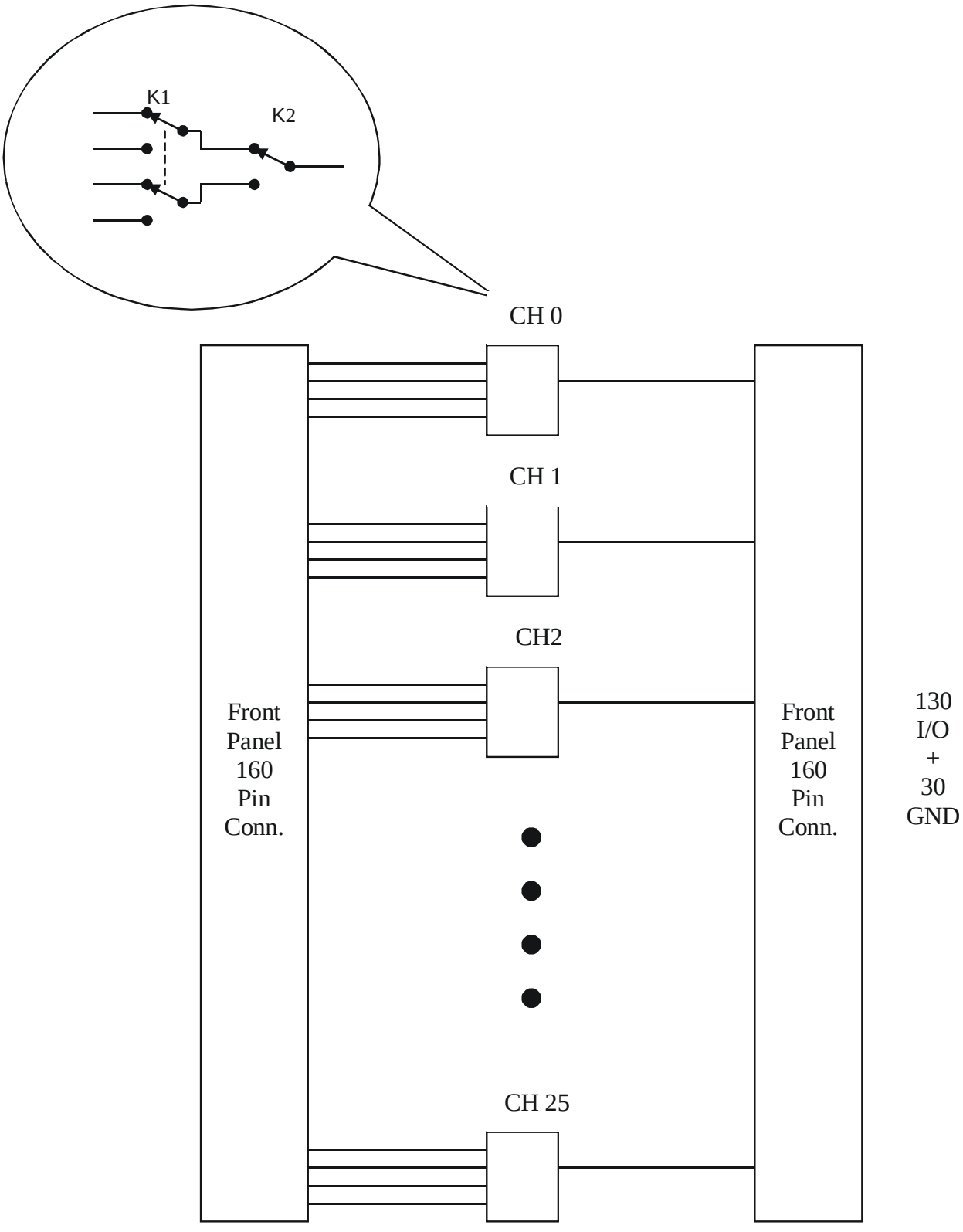

Figure 2-1, 1260-131B Block Diagram, 26 – 1x4 Mux's

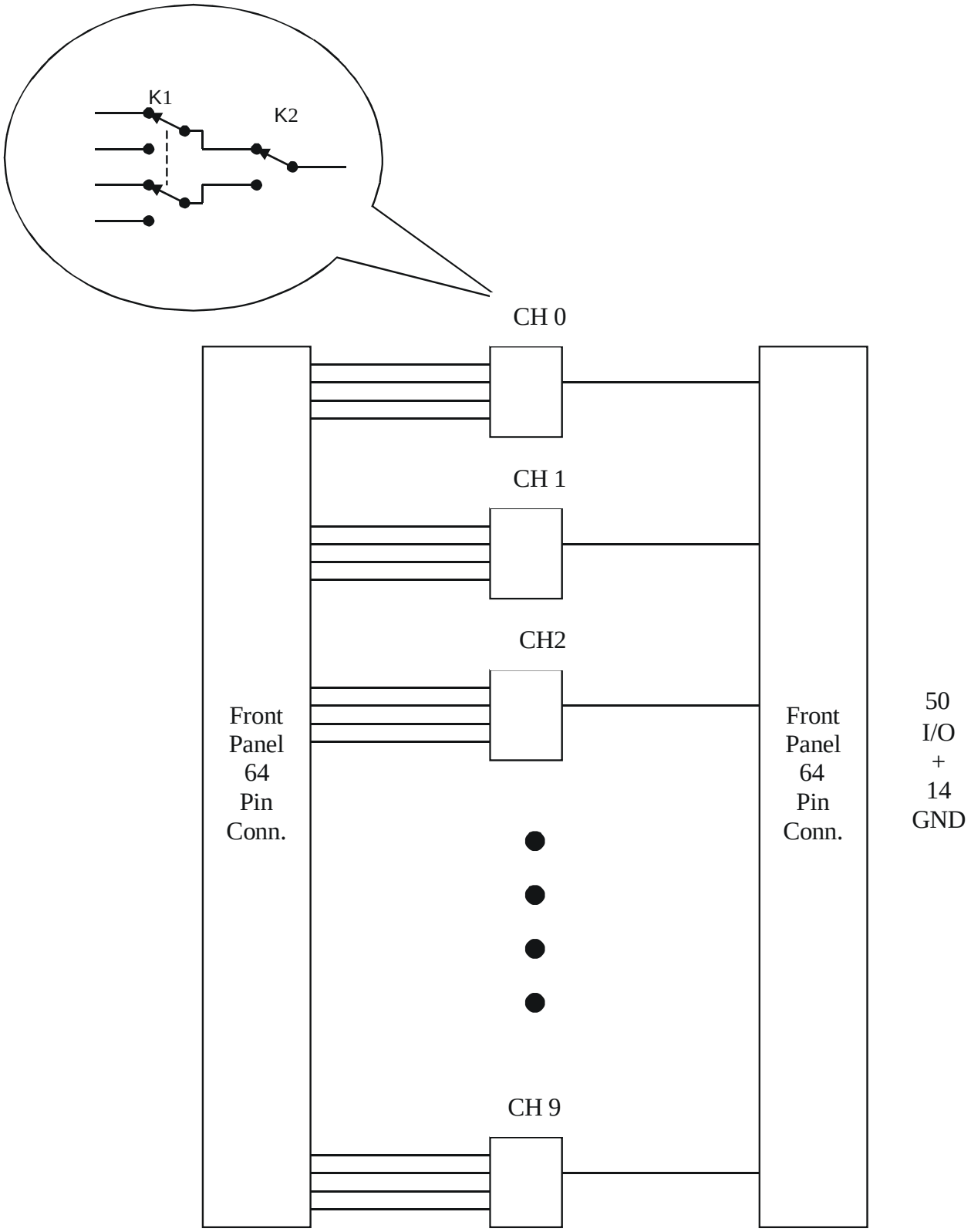

Figure 2-2, 1260-131A Block Diagram, 10 - 1x4 Mux's

Front Panel Connectors

The 1260-131B has one 160-pin front-panel connector, labeled J200. It is a 160-pin, modified DIN style, with 0.025” square posts as pins. It has one pin for each of the four inputs and one for each output. See **Figure 2-1** for 1260-131B Block Diagram.

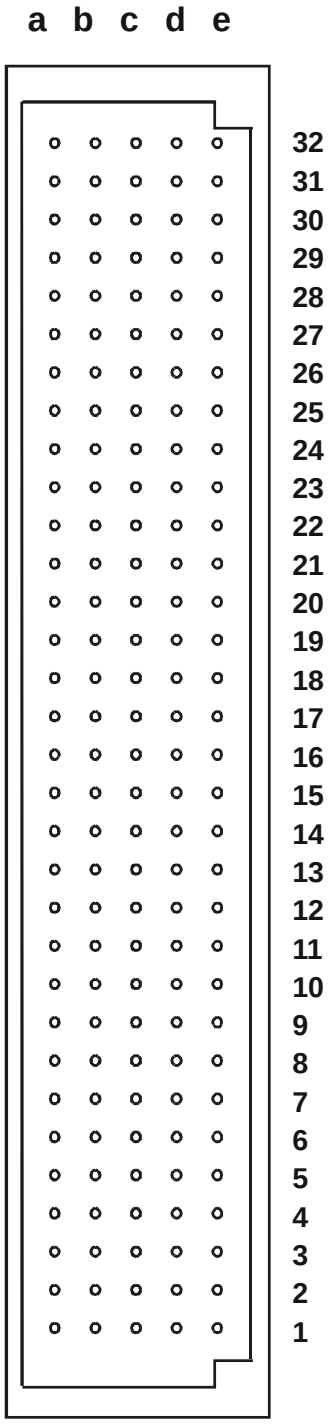

Figure 2-3, 1260-131B Front-Panel Connector Pin Numbering

The 1260-131A has one 64-pin front panel connector labeled J200. It is a 64-pin DIN style with .025' square posts as pins. See **Figure 2-2** for the 1260-131A Block Diagram.

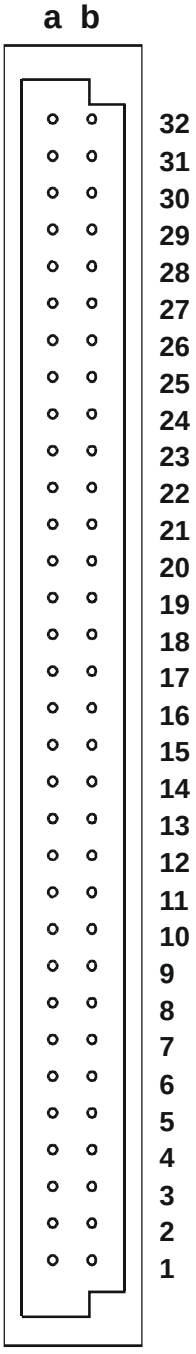

Figure 2-4, 1260-131A Front-Panel Connector Pin Numbering

Table 2-1 shows the mapping of channel numbers to connector pins for both models. Information about available mating connectors is provided immediately after **Table 2-1**.

Table 2-1, Channel to Connector Pin Mapping

Relay	Relay	Channel Number	IN	Common	OUT
K1 off	K2 off	000	J200-A3	0	J200-B1
K1 on	K2 off	001	J200-A4		
K1 on	K2 on	002	J200-B2		
K1 off	K2 on	003	J200-A2		
K3 off	K4 off	010	J200-A6	1	J200-B4
K3 on	K4 off	011	J200-A7		
K3 on	K4 on	012	J200-B5		
K3 off	K4 on	013	J200-A5		
K5 off	K6 off	020	J200-A10	2	J200-A9
K5 on	K6 off	021	J200-B8		
K5 on	K6 on	022	J200-A8		
K5 off	K6 on	023	J200-B7		
K7 off	K8 off	030	J200-A13	3	J200-B10
K7 on	K8 off	031	J200-B13		
K7 on	K8 on	032	J200-B11		
K7 off	K8 on	033	J200-A11		
K9 off	K10 off	040	J200-B14	4	J200-B16
K9 on	K10 off	041	J200-A16		
K9 on	K10 on	042	J200-A15		
K9 off	K10 on	043	J200-A14		
K11 off	K12 off	050	J200-B19	5	J200-B17
K11 on	K12 off	051	J200-A17		
K11 on	K12 on	052	J200-A18		
K11 off	K12 on	053	J200-A19		
K13 off	K14 off	060	J200-A20	6	J200-B23
K13 on	K14 off	061	J200-B20		
K13 on	K14 on	062	J200-B22		
K13 off	K14 on	063	J200-A22		
K15 off	K16off	070	J200-A23	7	J200-A24
K15 on	K16 off	071	J200-B25		
K15 on	K16 on	072	J200-A25		
K15 off	K16 on	073	J200-B26		
K17 off	K18 off	080	J200-A27	8	J200-B29
K17 on	K18 off	081	J200-A26		
K17 on	K18 on	082	J200-B28		
K17 off	K18 on	083	J200-A28		
K19 off	K20 off	090	J200-A30	9	J200-B32
K19 on	K20 off	091	J200-A29		
K19 on	K20 on	092	J200-B31		
K19 off	K20 on	093	J200-A31		
K21 off	K22 off	100	J200-E2	10	J200-D2
K21 on	K22 off	101	J200-C3		
K21 on	K22 on	102	J200-D1		
K21 off	K22 on	103	J200-C2		
K23 off	K24 off	110	J200-D4	11	J200-E4
K23 on	K24 off	111	J200-C5		
K23 on	K24 on	112	J200-E3		
K23 off	K24 on	113	J200-C4		

Relay	Relay	Channel Number	IN	Common	OUT
K25 off	K26 off	120	J200-C6	12	J200-C7
K25 on	K26 off	121	J200-E6		
K25 on	K26 on	122	J200-E5		
K25 off	K26 on	123	J200-D5		
K27 off	K28 off	130	J200-D8	13	J200-D7
K27 on	K28 off	131	J200-C8		
K27 on	K28 on	132	J200-E8		
K27 off	K28 on	133	J200-E7		
K29 off	K30 off	140	J200-D10	14	J200-E9
K29 on	K30 off	141	J200-E10		
K29 on	K30 on	142	J200-C9		
K29 off	K30 on	143	J200-C10		
K31 off	K32 off	150	J200-C12	15	J200-D11
K31 on	K32 off	151	J200-C13		
K31 on	K32 on	152	J200-C11		
K31 off	K32 on	153	J200-E11		
K33 off	K34 off	160	J200-E13	16	J200-E14
K33 on	K34 off	161	J200-D14		
K33 on	K34 on	162	J200-D13		
K33 off	K34 on	163	J200-C14		
K35 off	K36 off	170	J200-C16	17	J200-C15
K35 on	K36 off	171	J200-E16		
K35 on	K36 on	172	J200-E15		
K35 off	K36 on	173	J200-D16		
K37 off	K38 off	180	J200-E18	18	J200-D17
K37 on	K38 off	181	J200-E17		
K37 on	K38 on	182	J200-C18		
K37 off	K38 on	183	J200-C17		
K39 off	K40 off	190	J200-E20	19	J200-E19
K39 on	K40 off	191	J200-C19		
K39 on	K40 on	192	J200-D19		
K39 off	K40 on	193	J200-D20		
K41 off	K42 off	200	J200-C21	20	J200-D22
K41 on	K42 off	201	J200-C20		
K41 on	K42 on	202	J200-C22		
K41 off	K42 on	203	J200-E22		
K43 off	K44 off	210	J200-D23	21	J200-E24
K43 on	K44 off	211	J200-E23		
K43 on	K44 on	212	J200-C24		
K43 off	K44 on	213	J200-C23		
K45 off	K46 off	220	J200-D25	22	J200-D26
K45 on	K46 off	221	J200-C25		
K45 on	K46 on	222	J200-E25		
K45 off	K46 on	223	J200-E26		
K47 off	K48 off	230	J200-C27	23	J200-C26
K47 on	K48 off	231	J200-E27		
K47 on	K48 on	232	J200-E28		
K47 off	K48 on	233	J200-D28		
K49 off	K50 off	240	J200-D29	24	J200-E29
K49 on	K50 off	241	J200-C28		
K49 on	K50 on	242	J200-E30		
K49 off	K50 on	243	J200-C29		
K51 off	K52 off	250	J200-E31	25	J200-D31
K51 on	K52 off	251	J200-C30		
K51 on	K52 on	252	J200-D32		
K51 off	K52 on	253	J200-C31		

Note: Multiplexers 10-25 are **not** available on Model 1260-131A

Mating Connectors

The following **1260-131B** mating connector accessories are available:

160-Pin Connector Kit with backshell and pins, P/N 407664

The 160-Pin Connector Kit consists of a connector housing, aluminum backshell, and 160 crimp pins. After wire attachment, the pin is inserted into the housing and will snap into place, providing positive retention.

160-Pin Cable Assembly, 6 Ft., 24 AWG, P/N 407408-001

The 160-Pin Cable Assembly uses 24 AWG cable with crimp pins to mate with the 1260-131B. The other cable end is unterminated. Refer to **Table 2-1** for channel-to-pin mapping information.

The suggested crimp hand tool is PN991020. The crimp pin insertion tool is P/N 990898. The corresponding pin removal tool is P/N 990899.

The following **1260-131A** mating connector accessories are available:

64-Pin DIN, IDC Connector P/N 602004

This connector is for use with flat ribbon cable. This allows an economical means of cable assembly.

64 Pin DIN Crimp Connector Body P/N 602159-064
64 Pin DIN Crimp Pin P/N 602159-900

The crimp connector and pins allow more flexibility and better performance than the IDC connector but, has additional cable assembly cost. The crimp hand tool is P/N 990897. The insertion tool is P/N 990898. The extraction tool is P/N 990899.

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Chapter 3
MODULE OPERATION

Command Set

The 1260-131 card uses the existing 1260 and 1256 Series switch card command set. All commands supported by other relay modules (such as CLOSE, OPEN, SCAN, EXCLUDE, INCLUDE) are supported.

The OPEN, CLOSE, EXCL, INCL, and SCAN commands all use relay descriptors to specify a single relay or a range of relays to operate.

Operating In Message-Based Mode

Channel Descriptors For The 1260-131

The standard 1260-01T commands are used to operate the 1260-131 module. These commands are described in the 1260-01T User's Manual.

Each 1260-01T relay command uses a *channel descriptor* to select the channel(s) of interest. The syntax for a channel descriptor is the same for all 1260 series modules. In general, the following syntax is used to select a single channel:

```
(@ <module address> ( <channel range> ) )
```

The 1260-131 relay descriptor identifies a relay, or range of relays, to be operated. The relay descriptor uses module-specific syntax to uniquely identify each relay on the module.

The relay descriptor for the 1260-131 has the form:

<relay descriptor> ::= (@<module address> (<channel range>))

<module address> 1 to 12 for the 1260-100 Carrier
1 to 8 for the 1256 Switching System

<channel range> ::= <channel number>:<chanel number>|
<channel number>,<channel number>|
<channel number>

<Channel number> ::= <Mux><channel>

<Mux> ::= 00 to 09 for 1260-131A

00 to 25 for 1260-131B

<channel> ::= 0 to 3

The default state of each multiplexer (26 plcs) with no relays energized is for channel 0 (of each multiplexer) to be connected to the common. Therefore, there exists an implied closure. For example, if channel 072 of module 1 is connected and the command is issued:

```
OPEN (@1(072))
```

The implied closure is for channel 070 of module 1 to be connected.

Also, if the following command is issued:

```
CLOSE (@1(070,071,072))
```

Channel 072 will be the only channel closed, since it is the last channel in the range within the same mux.

The following examples illustrate the use of the channel descriptors for the 1260-131:

`OPEN (@8(002))`	Open channel 2 of Mux 0 on the 1260-131 that has module address 8 (channel 000 is connected by default)
`CLOSE (@8(021,032))`	Close channels 1 of Mux 2 and 2 of Mux 3 on the 1260-131 that has module address 8..

Reply To The MOD:LIST? Command

The 1260-100 and 1256 return a reply to the MOD:LIST? command. This reply is unique for each different 1260 series switch module. The syntax for the reply is:

<module address> : <module-specific identification string>

The <module-specific identification string> for the 1260-131 is:

```
1260-131A 10 1X4 2A MUX

1260-131B 26 1X4 2A MUX
```

So, for a 1260-131 whose <module address> is set to 8, the reply to this query would be:

```
8 : 1260-131 26 1X4 2A MUX
```

Operating The

In register-based mode, the 1260-131 is operated by directly writing and reading control registers on the 1260-131 module. The

1260-131 in Register-Based Mode

first control register on the module operates channels 0 through 7. The second control register operates channels 8 through 15. The third control register operates channels 16 through 19, etc. When a control register is written to, all channels controlled by that register are operated simultaneously.

The control registers are located in the VXIbus A24 Address Space. The A24 address for a control register depends on:

1. The A24 Address Offset assigned to the 1260-100 module by the Resource Manager program. The Resource Manager program is provided by the VXIbus slot-0 controller vendor. The A24 Address Offset is placed into the "Offset Register" of the 1260-01T by the Resource Manager.

2. The <module address> of the 1260-131 module. This is a value in the range from 1 and 12 inclusive for 1260-100, 1 and 8 for the 1256.

3. The 1260-131 control register to be written to or read from. Each control register on the 1260-131 has a unique address.

The base A24 address for the 1260-131 module may be calculated by:

> (A24 Offset of the 1260-01T) + (1024 x Module Address of 1260-131).

The A24 address offset is usually expressed in hexadecimal. A typical value of 204000_{16} is used in the examples that follow.

A 1260-131 with a module address of 7 would have the base A24 address computed as follows:

> Base A24 Address of 1260-131 = 204000_{16} + (400_{16} x 7_{10}) = $205C00_{16}$

The control registers for Adapt-a-Switch plug-ins and conventional 1260-Series modules are always on odd-numbered A24 addresses. The control registers for the 1260-131 reside at sequential odd-numbered A24 addresses for the module:

> (Base A24 Address of 1260-131) + 1 = Control Register 0
> (Base A24 Address of 1260-131) + 3 = Control Register 1
> (Base A24 Address of 1260-131) + 5 = Control Register 2
> ..., and so on.

So, for our example, the first control register is located at:

205C01 Control Register 0, controls channels 0 through 7

The second control register is located at:

205C03 Control Register 1, controls channels 8 through 15

Table 3-1 shows the relay assignments for each control register. Refer the **Table 2-1** for the relay to channel mapping.

Table 3-1, Control Register to Relay Assignments

Control Register	Channels							
	Bit 7 (MSB)	**Bit 6**	**Bit 5**	**Bit 4**	**Bit 3**	**Bit 2**	**Bit 1**	**Bit 0 (LSB)**
0	K8	K7	K6	K5	K4	K3	K2	K1
1	K16	K15	K14	K13	K12	K11	K10	K9
2	K24	K23	K22	K21	K20	K19	K18	K17
3	K32	K31	K30	K29	K28	K27	K26	K25
4	K40	K39	K38	K37	K36	K35	K34	K33
5	K48	K47	K46	K45	K44	K43	K42	K41
6	unused	unused	unused	unused	K52	K51	K50	K49

Setting a control bit to 1 closes the corresponding channel, and clearing the bit to zero opens the corresponding channel. Thus, if you write the value 1000 0101 binary = 133 decimal = 85 hexadecimal to Control Register 0, channels 0, 2, and 7 will close, while channels 1, 3, 4, 5, and 6 will open.

The present control register value may be read back by reading an 8-bit value from the control register address. **The value is inverted.** In other words, the eight-bit value read back is the one's complement of the value written.

If you want to change the state of a single relay without affecting the present state of the other relays controlled by the control register, you must:

1. Read the control register
2. Invert the bits (perform a one's complement on the register data
3. Perform a bit-wise AND operation, leaving all but the specific control register bit for the relay to change

4. **To open**: continue to step 5. **To close**: OR in the bit for the relay to close.

5. Write the modified value back to the control register.

For example, to close channel 13:

1. Read Control Register 1 (this register controls channels 8 through 15, with channel 8 represented by the LSB)

2. Invert the bits in the value read in step 1

3. AND with 1101 1111 binary (the zero is in the position corresponding to channel 13)

4. OR with 0010 0000 binary

5. Write the value to Control Register 1

The VISA I/O library may be used to control the module. The VISA function viOut8() is used to write a single 8-bit byte to a control register, while viIn8() is used to read a single 8-bit byte from the control register. The following code example shows the use of viOut8() to update the 1260-131 module.

1260-131 Example Code

```
#include <visa.h>

/* This example shows a 1260-01T at logical address 16 and a VXI/MXI */
/* interface */
#define RI1260_01_DESC     "VXI::16"

/* For a GPIB-VXI interface, and a logical address of 77 */
/* the descriptor would be:  "GPIB-VXI::77" */


/* this example shows a 1260-131 with module address 7 */
#define MOD_ADDR_120  7


void example_operate_1260_131(void)
{
      ViUInt8 creg_val;
      ViBusAddress creg0_addr;
      ViBusAddress creg1_addr;
      ViBusAddress creg2_addr;
      ViSession hdl1260;    /* VISA handle to the 1260-01T */
      ViSession hdlRM;      /* VISA handle to the resource manager */
      ViStatus error;       /* VISA error code */

      /* open the resource manager */
      /* this must be done once in application program */
      error = viOpenDefaultRM (&hdlRM);

      if (error < 0) {
            /* error handling code goes here */
      }

      /* get a handle for the 1260-01T */
      error = viOpen (hdlRM, RI1260_01_DESC, VI_NULL,VI_NULL, &hdl1260);
      if (error < 0) {
            /* error handling code goes here */
      }


      /* form the offset for control register 0 */


      /* note that the base A24 Address for the 1260-01T */
```

```
/* is already accounted for by VISA calls viIn8() and */
/* viOut8() */

   /* module address shifted 10 places = module address x 1024 */
creg0_addr = (MOD_ADDR_131 << 10) + 1;
creg1_addr = creg0_addr + 2;
creg2_addr = creg1_addr + 2;

/* close relays 14 without affecting the state of */
/* relays 9, 10, 11, 12, 13, 15, and 16 */
error = viIn8 (hdl1260, VI_A24_SPACE, creg1_addr, &creg_val);
if (error < 0) {
     /* error handling code goes here */
}

/* invert the bits to get the present control register value */
creg_val = ~creg_val;

/* AND to leave every relay except 14 unchanged */
creg_val &= ~ (0x20);

/* OR in the bit to close relay 14 */
creg_val |= 0x20;

/* write the updated control register value */
error = viOut8 (hdl1260, VI_A24_SPACE, creg1_addr, creg_val);
if (error < 0) {
     /* error handling code goes here */
}


/* open relay 17 without affecting channels 18 through 24 */
error = viIn8 (hdl1260, VI_A24_SPACE, creg2_addr, &creg_val);
if (error < 0) {
     /* error handling code goes here */
}

/* invert the bits to get the present control register value */
creg_val = ~creg_val;

/* AND to leave every relay except 17 unchanged */
/* leave bit 0 clear to open relay 17 */
creg_val &= ~ (0x01);

/* write the updated control register value */
error = viOut8 (hdl1260, VI_A24_SPACE, creg2_addr, creg_val);
if (error < 0) {
     /* error handling code goes here */
```

```
      }


      /* close the VISA session */
      error = viClose( hdl1260 );
      if (error < 0) {
            /* error handling code goes here */
      }
}
```

Chapter 4
OPTIONAL ASSEMBLIES

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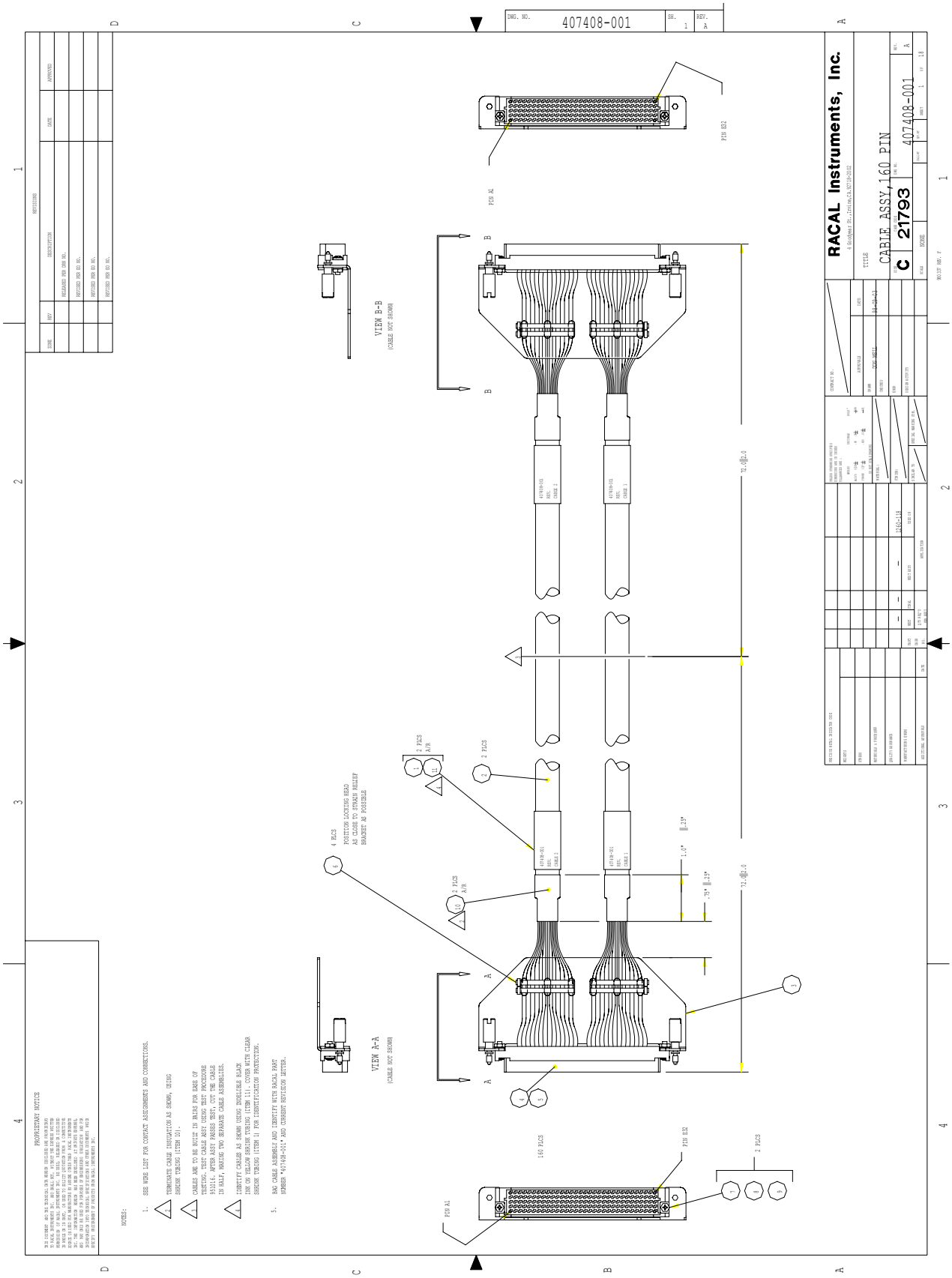
Assembly 407664
Connector kit, 160 Pin, CrimpRev Date 7/30/98 Revision A

#	Component	Description	U/M	Qty Reqd.	REF
1	602258-116	CON-CAB-RCP160C,100S	-E EA	1.000	
2	602258-900	TRMCRP-SNP-U-F26-20G	-E EA	170.000	


DWG. NO. 407408-001
RACAL Instruments, Inc.
CABLE ASSY,160 PIN
C 21793 407408-001
VIEW B-B
VIEW A-A
160 PLCS
2 PLCS
4 PLCS
POSITION LOCKING HEAD AS CLOSE TO STRAIN RELIEF BRACKET AS POSSIBLE
PROPRIETARY NOTICE
NOTES:
1. SEE WIRE LIST FOR CONTACT ASSIGNMENTS AND CONNECTIONS.
TERMINATE CABLE INSULATION AS SHOWN, USING SHRINK TUBING (ITEM 10).
CABLES ARE TO BE BUILT IN RACAL FOR EASE OF TESTING. TEST CABLE ASSY USING TEST PROCEDURE 951014. AFTER ASSY PASSES TEST, CUT THE CABLE IN HALF, MAKING TWO SEPARATE CABLE ASSEMBLIES.
IDENTIFY CABLES AS SHOWN USING INDELIBLE BLACK INK ON YELLOW SHRINK TUBING (ITEM 11). COVER WITH CLEAR SHRINK TUBING (ITEM 9) FOR IDENTIFICATION PROTECTION.
5. BAC CABLE ASSEMBLY AND IDENTIFY WITH RACAL PART NUMBER "407408-001" AND CURRENT REVISION LETTER.

Chapter 5

PRODUCT SUPPORT

Product Support

EADS North America Test and Services, has a complete Service and Parts Department. If you need technical assistance or should it be necessary to return your product for repair or calibration, call 1-800-722-3262. If parts are required to repair the product at your facility, call 1-949-859-8999 and ask for the Parts Department.

For worldwide support and the office closest to your facility, refer to the website for the most complete information http://www.eads-nadefense.com.

Warranty

Use the original packing material when returning the 1260-131 to EADS North America Test and Services, for calibration or servicing. The original shipping container and associated packaging material will provide the necessary protection for safe reshipment.

If the original packing material is unavailable, contact EADS North America Test and Services, Customer Service at 1-800-722-3262 for information.

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